KĪLAUEA VOLCANO'S NOVEMBER 1979 ERUPTION*

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Kīlauea Volcano erupted November 16-17, 1979, on its upper east rift zone. The eruption was preceded by a seismic swarm that started at 0900 hr, March 15. Summit deflation and inflation at the eventual eruption site began simultaneously but one-half hour after the onset of the seismic swarm. Copious emission of steam began east of Pauahi Crater at 0805 hr, November 16, but no lava was erupted from these cracks. At 1818 hr, the sounds of fountaining and falling spatter was heard from vents east of the steaming cracks. At 0821 hr, lava welled up in a new fissure in northwestern Pauahi and soon established low fountains. Seven minutes later, observers arrived at the eastern vents and observed a curtain of fire 5-10 m high and 100 m long. These eastern fountains migrated eastward and ceased activity at 0915 hr. At 1130 hr, two more vents opened in Pauahi Crater, followed shortly by opening of a fourth vent in the crater and cessation of activity of the one that opened at 0821 hr. Over the next 1-1/2 hours, five more vents opened progressively westward of the crater. Slightly before 1600 hr, activity at the western vents began to wane and ceased within the next hour. Lava production at the three still-active vents in Pauahi Crater remained relatively constant until 0100 hr, November 17, followed by gradual waning and cessation of activity at 0730 hr.

The eruption was small (500,000-700,000 m^3), with low fountains and fairly viscous, possibly low-temperature lava compared to lava erupted at nearby Mauna Ulu (active 1969-1974). The 1979 lava was initially olivine-poor, and emitted only small amounts of SO_2 from active and dying fountains. However, appreciable amounts of SO_2 were emitted from the steaming area east of the crater and at leading edges of opening vents. Field, petrological, seismological, geoelectrical, geochemical, and deformation data suggest that the lava for the eruption came from a shallow magma source that had resided for some time in the rift zone. The right-stepping pattern of vents and cracks suggests that a left lateral shear couple was present during the eruption.

Hawaii Volcano Observatory released a press statement three weeks before the eruption stating that the likelihood of an eruption on Kīlauea had increased significantly. Observers were at the site before the outbreak of lava.

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* Abstract